

Simulation Center

U.S. Army Space and Missile Defense Command
Space and Missile Defense Battle Lab

The Simulation Center (SC) was created by the Army's Ballistic Missile Defense Command (now the U.S. Army Space and Missile Defense Command (SMDC)) in 1981 to provide high-performance computational assets needed to address the Research, Development, Test & Evaluation (RDT&E) of missile systems and of related technology.

In 1996, the SC became a Distributed Center partner with the DoD's High Performance Modernization Program. As a Distributed Center, the SC supports high performance computer projects and is connected to the Defense Research and Engineering Network (DREN). This provides our users significant computational resources and high bandwidth connectivity.

The SC provides the right high performance computational assets to the right users at the right time by:

- Providing the most appropriate hardware, software, network, and communications tools and environments for each user program
- Providing the engineering services required to acquire and integrate cost- and mission-effective computer architectures for user programs
- Providing a secure, cost effective computing environment that optimizes resources for analysis tasks common to the SMDC community.

The vision of the SC is to be the Army's premier center for Air, Space, and Missile Defense high performance computational support – providing the tools, technologies, and expertise needed to realize the Missile Defense Agency's vision of making Air and Missile Defense a reality for today and into the 21st century.

The following configurations are examples of services the SC provided in FY02; however, the center continues to improve its capabilities:

Systems:

Cray SV1 — The SV1 has 16 processors and 32 GBytes of main shared memory. Each processor is capable of two Billion Floating Point Operation per second (GFLOPS).

SGI Origin 3800 — The Origin 3800 has 96 processors and 72 GBytes of memory. The 3800 provides a shared memory architecture and has a peak power of 77 GFLOPS.

SGI Origin 2000 — The Origin 2000 has 128 processors and 32 GBytes of memory. The 2000 provides a shared memory architecture and has a peak power of 51GFLOPS.

Linux Cluster— The Cluster has 32 nodes. Each node has two processors for a total of 64 processors and 64 GBytes of distributed memory. The cluster has a Dolphin high speed interconnect for parallel applications.

System Software — Compilers include FORTRAN, HPC FORTRAN, "C" and "C++"; debuggers; Message Passing Interface (MPI); Open MP; and LSF queuing system.

Storage:

The SC provides both short term and permanent storage for our scientific users. Short term is provided by fault tolerant disk arrays accessible via the computing systems. Long term storage is provided by a combination of hierarchical storage and high density tapes on site and off site for disaster recovery.

Networks:

The SC network provides up to Gigabit Ethernet for intra-center connections and ATM-OC-3 for DREN connections.

Visualization:

Scientific visualization is provided with high performance workstations connected to the HPC servers with Gigabit speeds.

Sample — Aerosoft's GASP3.x, GASP4, GUST 4
Alias |Wavefront Maya

Applications:

Analytical Graphical Satellite Tool Kit
Amtec Tecplot
SGI — Pro-Developer Workshop
Army — EADSIM, EADTB, FORCES
Sandia National Laboratory – CTH
NASA — TIGER/Cart 3D, Cobalt60
MKS — Toolkits
Intelligent Light — Fieldview

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